IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF UTAH, CENTRAL DIVISION

XIDRONE SYSTEMS, INC., Plaintiff and Counter Defendant, v. FORTEM TECHNOLOGIES, INC., Defendant and Counter Claimant.	**MEMORANDUM DECISION AND ORDER ON CLAIM CONSTRUCTION** Case No.: 2:23-cv-00430-AMA-DBP District Judge: Ann Marie McIff Allen Magistrate Judge: Dustin B. Pead

This matter is presently before the Court on cross-briefs for claim construction and related response briefs filed by the parties.[1] The parties submitted tutorials.[2] On November 20, 2024, the Court held a claim-construction hearing. Stephen R. Risley appeared and argued on behalf of Plaintiff and Counter Defendant XiDrone Systems, Inc. ("XiDrone"). Steven P. Tepera appeared and argued on behalf of Defendant Fortem Technologies, Inc. ("Fortem"). Having considered the parties' briefs, the record in this case, and the arguments of counsel, the Court construes the disputed terms in the manner, and for the reasons, set forth below.

BACKGROUND

In this case, XiDrone seeks to enforce two of its patents against Fortem, namely U.S. Patent 9,689,976 (the "'976 Patent") and U.S. Patent 11,378,651 (the "'651 Patent").[3] Both patents describe systems designed to detect, track, and deter small commercial drones (also

[1] ECF Nos. 31, 37, 40, 45.
[2] ECF Nos. 58–59.
[3] ECF No. 31 at 1.

referred to as unmanned aerial vehicles[4]) to prevent potentially harmful small commercial drones from reaching civilian or military targets.[5] The systems described in the patents use "multiple sensors to detect, identify, track, assess, and/or mitigate a target drone."[6] XiDrone alleges Fortem uses and sells various drone-detection systems that infringe the '651 and '976 Patents.[7]

LEGAL BACKGROUND

"[T]he construction of a patent, including terms of art within its claim, is exclusively within the province of the court" rather than the jury. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 372 (1996). When construing claim language, "the trial judge has an independent obligation to determine the meaning of the claims, notwithstanding the views asserted by the adversary parties." *Exxon Chem. Pats., Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555 (Fed. Cir. 1995). In *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005), the Federal Circuit laid out the analytical framework for courts to follow when construing patent language, splitting the available evidence into two broad categories: intrinsic and extrinsic.

Intrinsic evidence includes: (1) the claim language, (2) the specification, and (3) the prosecution history. Taking these intrinsic sources of evidence in sequence, analysis of a patent begins with the words of the claim itself, ascribing the words therein "their ordinary and customary meaning," namely "the meaning that the term would have to a person of ordinary skill

[4] ECF No. 37 at 1.
[5] *See* ECF No. 31 at 2–3. "Small commercial drones," are defined in the '651 Patent as those weighing less than 20 kilograms (about 55 pounds). Joint App'x at 24, ECF No. 33, Ex. 1.
[6] ECF No. 31 at 3.
[7] *E.g.* Compl. ¶ 74. Fortem denies XiDrone's allegation but does so in a manner that makes it unclear whether Fortem makes any "class 1 and class 2 drone detection system, method, device, and/or computer program" at all. Ans. & Counterclaim ¶ 74. Fortem's counterclaim seems to suggest it uses or sells some unspecified product. Ans. & Counterclaim ¶ 154.

in the art in question at the time of the invention" as determined by the patent-application filing date. *Id.* at 1312–13. Beyond the claims asserted in a given suit, "[o]ther claims of the patent in question, both asserted and unasserted, can be valuable sources of enlightenment as to the meaning of a claim term." *Id.* at 1314.

Second, the claim(s) "must be read in view of the specification, of which they are a part." *Id.* at 1315. The specification provides the "best source" for understanding a technical term in a claim and may reveal a special definition used for a claim term or a disclaimer of claim scope. *Id.* at 1315–16. "[T]he inventor's lexicography governs." *Id.* at 1316. Moreover, "an intentional disclaimer, or disavowal, of claim scope by the inventor" "dictate[s] the correct claim scope, and the inventor's intention, as expressed in the specification, is regarded as dispositive." *Id.* However, the embodiments described in the specification must not be read in a manner to limit the scope of the claims. *Id.* at 1323 ("although the specification often describes the very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments").[8]

Third, analysis of a given patent "should also consider the patent's prosecution history, if it is in evidence." *Id.* at 1317. This consists of "the complete record of the proceedings before the PTO[9] and includes the prior art cited during the examination of the patent." *Id.* "Yet because the prosecution history represents an ongoing negotiation between the PTO and the

[8] The Court is mindful "that there is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification." *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998).
[9] Patent and Trademark Office.

applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Id.*

Turning next to sources of extrinsic evidence, this category includes all evidence external to the patent and prosecution history including, commonly: expert and inventor testimony, dictionaries, and learned treatises. While extrinsic evidence can be helpful, "it is less significant than the intrinsic record in determining the legally operative meaning of claim language." *Id.* (cleaned up). Thus, "it is permissible for the district court in its sound discretion to admit and use such evidence." *Id.* at 1319. Nonetheless "[i]n exercising that discretion, and in weighing all the evidence bearing on claim construction, the court should keep in mind the flaws inherent in each type of evidence and assess that evidence accordingly." *Id.*

Ultimately, "there is no magic formula or catechism for conducting claim construction." *Id.* at 1324. The court may consider any of the various sources of evidence in any sequence, "as long as those sources are not used to contradict claim meaning that is unambiguous in light of the intrinsic evidence." *Id.*

ANALYSIS

In the subsections below, this Court will address the parties' competing claim constructions, in the order raised in their Joint Claim Construction Chart.[10]

I. Sensor Fusion Processor

Claim 1 of the '651 patent discloses:

> a sensor fusion processor operatively coupled to the at least one[11] range sensor and the at least one directional or omnidirectional sensor, the sensor fusion

[10] *See* ECF No. 50, Ex. 1.

[11] The phrase "the at least one . . ." is not a typographical error in this order. The phrase repeats throughout the '651 patent.

processor configured to detect a target and determine direction and range of the target in response to the at least one range sensor and the at least one directional or omnidirectional sensor.[12]

The parties propose competing constructions of "sensor fusion processor":

XiDrone's Proposed Construction	Fortem's Proposed Construction
A computer or a part of a computer capable of receiving data from one or more sensors and processing said data for various purposes germane to locating, identifying, or deterring unmanned aerial vehicles.	Taking data from multiple sensors, combining it using a mathematical technique to produce more accurate data for a specific task such as detection, tracking, or identification, then outputting the result for the task under consideration into a single output that is a combination of the data from the different sensors. A microprocessor that performs the mathematical techniques to combine data from different sensors.

The Court declines to adopt either construction in full. During the claim-construction hearing the parties identified three primary disputes involving this phrase, namely: (a) whether the term sensor fusion processor requires the use of multiple sensors; (b) whether the sensor fusion processor must somehow combine the data from multiple sensors; and (c) how the sensor fusion processor goes about processing data it receives (i.e., whether this involves application of an algorithm or mathematical formula (as Fortem contends) or whether "it's possible it could do it in other ways"[13] (as XiDrone contends). While the Court ultimately construes the term "sensor fusion processor" as a whole, it addresses these three issues separately for the sake of clarity.

[12] Joint App'x ("JA") at 35, ECF No. 33, Ex. 1.
[13] Claim Const. Hr'g Tr. 31:3–4, Nov. 20, 2024 (ECF No. 72).

a. A sensor fusion processor receives data from multiple sensors

Turning first to the plain language of Claim 1 of the '651 Patent, that language refers to a device capable of receiving data from multiple sensors (specifically, "the at least one range sensor and the at least one directional or omnidirectional sensor" [14]). XiDrone "readily concede[s] the Claim 1 of the '651 Patent is two sensors, at least. It requires two sensors."[15]

To be clear, everyone, the Court included, acknowledges a sensor fusion processor could be configured to do additional tasks, including receiving data from a single sensor. Fortem's brief acknowledges the sensor fusion processor may, at times, receive data from a single sensor. Fortem expressly indicates its proposed "construction does not limit the actions of a sensor fusion processor *only* to combining different sensors."[16] Nonetheless, Claim 1 requires the sensor fusion processor to be configured to receive data from two sensors. Accordingly, for purposes of Claim 1, the Court construes the term sensor fusion processor as a device that receives inputs from at least two sensors.

b. A sensor fusion processor fuses, integrates, combines, or otherwise joins data from the multiple sensors

Next, the Court turns to whether the sensor fusion processor must combine data from these multiple sensors. Claim 1 uses the word "fusion," which itself suggests a joining of two or

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[14] JA at 35.

[15] *Id.* at 18:11–12. In an effort to avoid this construction, XiDrone suggests "sensor fusion processor standing alone in a vacuum could . . . include one or more sensors." *Id.* at 18:14–15. The Court is not construing terms in a vacuum. The Court is construing the term sensor fusion processor in the context of Claim 1 of the '651 Patent, which plainly takes information from two sensors. XiDrone's suggestion is puzzling in light of its own brief, which cites the Federal Circuit's reminder that it "does not interpret claim terms in a vacuum" ECF No. 40 at 4 (quoting *Kyocera Wireless Corp. v. Int'l Trade Comm'n*, 545 F.3d 1340, 1347 (Fed. Cir. 2008)).

[16] Fortem's Resp. Br. at 7, ECF No. 45.

more things. While XiDrone resists this definition, it offers no basis in the record to show that an ordinary person skilled in the art understands the word fusion to mean something other than joining.

Also, XiDrone's attempts to avoid a construction of fusion that means something less than the combination of two items run contrary not only to the express patent language, but also to XiDrone's own briefing. XiDrone's brief proposes the following definition of "fusion": the union of different things by or as if by melting, blending, coalition; the state or fact of being so united."[17] Accordingly, XiDrone's own proposed definition of fusion includes a joining by "union of different things." During the claim-construction hearing, XiDrone expressed a preference for the word "integrated" or "combined" and argued against the word "fused."[18] At the risk of stating the obvious, the Court underscores that Claim 1 of the '651 Patent itself uses the word "fusion."

Thus, the plain language of Claim 1 of the '651 Patent clearly indicates the fusion of data from the two sensors indicated (namely, "determine[ing] direction and range of the target in response to the . . . range sensor and the . . . directional or omnidirectional sensor").[19] Further, XiDrone's own arguments in its briefing and during the claim-construction hearing offer alternative definitions such as melting, blending, integrating, or combining. In light of the foregoing, the Court declines to adopt XiDrone's proposed construction that allows sensor fusion to occur where a processor receives and processes data from a single sensor because that

[17] XiDrone Br. at 6, ECF No. 31 (quoting Webster's New World Dictionary (1988)).
[18] Claim Const. Hr'g Tr. 55:15, 56:6–10.
[19] JA at 35.

proposed construction has no basis in the record.[20] The plain language of Claim 1 discloses the combination of information from multiple sensors.

c. A sensor fusion processor uses algorithms or mathematical formulas

XiDrone proposes a definition of sensor fusion processor, in pertinent part, as a "computer or part of a computer" that receives and processes data. Yet, upon closer scrutiny, the computer XiDrone describes to the Court does not compute. XiDrone acknowledges "processing" occurs but argues against telling the jury the processor performs an "algorithm" or "mathematical technique."[21] This argument runs contrary to the '651 Patent's specifications and glossary. First, the '651 Patent specification indicates "algorithms will be used" by the sensor

[20] XiDrone also invokes the prosecution history, contending that a patent examiner initially rejected a claim, in a parent patent to the '651 Patent, to "sensor fusion processor" based on a device described in the so-called "Venema" patent that could use images from "one or more sensors." *See* ECF No. 40 at 7–8. The Court does not find this reference to prosecution history persuasive. First, an examiner's subjective interpretation of the device in Venema bears little if any relevance to the '651 Patent, a fact XiDrone's counsel acknowledged during oral argument. *See* Claim Const. Hr'g Tr. 15:14–17. Further, XiDrone's recitation of the patent-prosecution history fails to grapple with other important information, most notably the attorney response to this examiner's suggestion, which clarified the system described by the parent to the '651 Patent was a "multi-sensor system" with the "sensor fusion processor being structured to accept and integrate the first, second, and third signals to determine a position of the drone target in three dimensions." XiDrone App'x at 416–17, ECF No. 40, Ex. 1. While the PTO also rejected the initial application for the '651 Patent, in part, based on the so-called "Fullerton" prior art, *see* JA at 409, the PTO resolved its concerns related to Fullerton on grounds unrelated to the respective designs of the processor in Fullerton and the '651 Patent. *See* JA at 331, 391–95. Thus, the prosecution history lacks clarity as to the understanding of sensor fusion processor on the part of the PTO or the patent applicant. This lack of clarity is not particularly surprising: "[T]he prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, [and consequently] it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1317. Here, the patent-prosecution history is not enough to overcome the claim language indicating a system with multiple sensors.

[21] *See* ECF No. 40 at 3; Claim Const. Hr'g Tr. 31:1–13.

fusion processor.[22] Additionally, the '651 Patent provides a definition of "algorithm" as: "a process or set of rules to be followed in calculations or other problem-solving operations by a computer."[23] These are the only descriptions the parties identify in the '651 Patent of the operation of a processor. Thus, because the specification affirmatively states the sensor fusion processor uses algorithms and the '651 Patent's glossary defines the processing of a computer by reference to, and definition of, an "algorithm," the Court will use the term algorithm to define the function of the sensor fusion processor. XiDrone offers no basis in the record for finding the sensor fusion processor, or any other processor in the '651 Patent, processes by means other than an algorithm as that term is expressly defined in the '651 Patent.

d. The Court declines to adopt other functions of the sensor fusion processor in its definition because those functions are superfluous

The parties list other purposes to which a sensor fusion processor might be put. XiDrone offers tasks "germane to locating, identifying, or deterring unmanned aerial vehicles" while Fortem offers specific tasks, such as "detection, tracking, or identification."[24] The Court agrees with counsel for XiDrone[25] that these additional tasks are superfluous to the definition of the sensor fusion processor itself. Also, to the extent any of these tasks are part of the patented

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[22] JA at 31. XiDrone suggests this importation of algorithm imports a limitation from the specification. Not so. Rather, XiDrone never points to anything in the record to show that "processing" by a computer can be accomplished absent an algorithm or mathematical technique of some sort. During the claim construction hearing XiDrone's counsel likewise failed to explain how a computer can process without the use of an algorithm or mathematical process. *See* Claim Const. Hr'g Tr. 31:3–4 (speculating the sensor fusion processor could possibly process data "in other ways" but defining none). Moreover, computer processors use binary, which is itself a mathematical process. It is unhelpful to attempt to define sensor fusion processor without taking this basic function of a computer processor into account.

[23] JA at 34.

[24] ECF No. 50, Ex. 1 at 1.

[25] *See, e.g.*, Claim Const. Hr'g at 29:22–30:1.

system, they are described elsewhere in the patent (i.e., by words other than "sensor fusion processor"). Accordingly, the Court declines to add any of these additional functions to the definition of sensor fusion processor.

e. The Court declines to adopt Fortem's proposal that a sensor fusion processor "outputs the result for the task under consideration into a single output"

Fortem's proposal includes a limitation not found anywhere in the claim or specifications, namely, that the sensor fusion processor "output[s] the result for the task under consideration into a single output . . . ."[26] As XiDrone correctly points out,[27] limiting the sensor fusion processor to "outputting the result for the task under consideration into a single output" runs contrary to the specifications. The specifications indicate the sensor fusion processor, using "a set of algorithms and processes[,] provides . . . a visual display of continuous [drone] location as well as the EO/IR[[28]] imagery and threat assessment . . . ."[29] Thus, while it is true that one portion of the specifications indicates the sensor fusion processor is capable of displaying a single "Threat Assessment" value for a human monitoring the system,[30] the Court will not "confin[e] the claims to those embodiments" found in the specifications, particularly where other specifications teach to the contrary. *See Phillips*, 415 F.3d at 1323.

[26] *E.g.*, Joint Claim Construction Chart at 1, ECF No. 50, Ex. 1.
[27] *See* ECF No. 40 at 6.
[28] EO/IR stands for Electro Optical and Infra-Red imagers. JA at 24.
[29] JA at 31–32.
[30] *E.g.* JA at 23.

Based on the foregoing, the Court construes "sensor fusion processor" as: a computer or a part of a computer capable of receiving data from multiple sensors and combining that data using an algorithm or multiple algorithms.[31]

II. Guided by an RF Control Signal to Aerially Navigate to Intercept

Claim 1 of the '651 patent discloses:

> a system-operated counter unmanned aerial vehicle dispatchable by the system to intercept the detected target, the system-operated counter unmanned aerial vehicle configured to be guided by an RF control signal to aerially navigate to intercept the detected target based on autonomous navigation data supplied by the system.[32]

The parties propose competing constructions for the phrase "guided by an RF control signal to aerially navigate to intercept":

XiDrone's Proposed Construction	Fortem's Proposed Construction
[XiDrone divides this term:] [Guided by an RF control signal:] A radio frequency signal instructing, directing, or commanding a counter unmanned aerial vehicle. [Intercept:] Stop, seize, deflect, or interrupt the intended course of an unmanned aerial vehicle.	Provided ongoing guidance information to direct the flight of the counter unmanned aerial vehicle until it reaches the target UAV.

The Court declines to construe this term because the parties have not identified any "actual disputes" the Court must resolve. *See, e.g.*, *Summit 6, LLC v. Samsung Elecs. Co.*, 802 F.3d 1283, 1291 (Fed. Cir. 2015) (affirming district court decision to decline to construe a claim

[31] In the event "algorithm" needs to be further defined, the Court will apply the definition supplied in the '651 Patent, absent compelling reasons to do otherwise. "Algorithm" is defined in the '651 Patent as: "a process or set of rules to be followed in calculations or other problem-solving operations by a computer." JA at 34.

[32] JA at 35.

term because it was a "straightforward term" that did not require construction). XiDrone proposes splitting the phrase. In doing so, it removes the words "to aerially navigate." XiDrone offers no explanation or justification for adopting this disjointed definition. Fortem, on the other hand, inserts the word "ongoing" without offering adequate justification for doing so. In response to the Court's questions during the hearing, Fortem suggested "ongoing" means the signal is more than a signal given at launch.[33] The Court finds Fortem's requested construction superfluous. The claim itself indicates the signal is a guidance signal. It says nothing about a launch signal. The Court will not add additional phrasing to repeat what is clear on the face of the claim language.

Based on the parties' briefing and argument during the hearing, the Court concludes no construction is necessary here. An ordinary person skilled in the art would read the phrase "guided by an RF control signal to aerially navigate to intercept" in accordance with the plain and ordinary meaning of those words. Both parties' proposals will inject unnecessary ambiguity into an otherwise understandable phrase.

III. Countermeasure Operatively Coupled to the Location Processor

Claim 1 of the '976 patent discloses, in part: "the countermeasure operatively coupled to the location processor."[34] The parties propose the following competing constructions for this phrase:

[33] Claim Const. Hr'g Tr. 89:6–90:2.
[34] JA at 11.

XiDrone's Proposed Construction	Fortem's Proposed Construction
[XiDrone divides this term:] [operatively coupled:] Connected or linked, directly or indirectly, in such a way so as to be usable together. [location processor:] A computer or part of a computer capable of receiving sensor data germane to an unmanned aerial vehicle (UAV), processing said data, and determining the location of the subject UAV.	The countermeasure is operated by signals from the location processor.

The Court declines to adopt either party's construction here because neither proposal is sufficiently supported. At the outset, there does not appear to be any actual disagreement about the meaning of location processor and consequently no need to construe it. Thus, the Court turns its focus to "operatively coupled" as used in Claim 1 of the '976 Patent.

The Court declines to adopt XiDrone's proposal because its immediate resort to dictionary definitions under these circumstances runs afoul of the warning in *Phillps* against such a course. As *Phillips* warns, general dictionaries collect word meanings applicable to a variety of settings and "it is inevitable that the multiple dictionary definitions for a term will extend beyond the 'construction of a patent [that] is confirmed by the avowed understanding of the patentee, expressed by him, or on his behalf, when his application for the original patent was pending.'" 415 F.3d at 1321–22. This risk seems particularly acute where XiDrone uses dictionary definitions in an attempt to expand the term "operatively coupled" to mean "connected or linked, directly or indirectly, in such a way as to be usable together."[35] It is difficult to imagine any part of the counter-drone system described in the '976 Patent that is not

[35] ECF No. 31 at 15.

"directly or indirectly" linked such "to be usable together." XiDrone's proposal stretches the phrase "operatively coupled" beyond any useful meaning.

Additionally, while XiDrone does reference the specifications rather than a dictionary for a portion of its argument, that portion of XiDrone's argument attempts to simply read the word "operatively" out of the claim entirely. Specifically, XiDrone attempts to define "operatively coupled" by citing to Figure 1 of the '976 Patent as well as the Specification at column 7, lines 26–29. Yet the portion of the specification describing the cited Figure 1 sets forth an "RF receiver coupled with omnidirectional and directional antennae . . . ."[36] Regardless of what the Specification and Figure might teach about what "coupled" means, it does not answer the question here of what "operatively coupled" means. The word "operatively" cannot simply be ignored or read out of this claim.

On the other hand, the Court declines to adopt Fortem's proposal because its suggestions are not adequately supported by the record. Fortem's proposal suggests the words "operatively coupled" mean the countermeasure is "operated by" the location processor.[37] Yet nothing in Fortem's briefing justifies this request. Rather, Fortem discusses the reason the structures are "arranged to perform the recited functions"[38] but does not offer any source for the words "operated by" in its proposed construction of this term.

Finally, the Court notes the phrase "operatively coupled" is used in the paragraph immediately preceding the portion at issue, wherein Claim 1 of the '976 Patent recites, "a

[36] JA at 3, 10 (emphasis added).
[37] Joint Claim Construction Chart, ECF No. 50, Ex. 1.
[38] ECF No. 45 at 11.

location processor operatively coupled to the radar and the radio frequency receiver . . . ."[39] Any construction of "operatively coupled" should be equally applicable to both paragraphs, absent some strong reason to do otherwise. *See Phonometrics, Inc. v. N. Telecom Inc.*, 133 F.3d 1459, 1465 (Fed. Cir. 1998) ("A word or phrase used consistently throughout a claim should be interpreted consistently."); *Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1345 (Fed. Cir. 1998) ("whatever interpretation we assign should encompass both uses because the same word appearing in the same claim should be interpreted consistently").

Based on the foregoing, the words "operatively coupled" suggest a linking together to perform some function, which no one appears to dispute. Any further attempt to construe this language is likely to lead to an improper addition to or subtraction from the patent claim, a result counseled against by the Federal Circuit in similar circumstances. *See Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1118 (Fed. Cir. 2004) (finding error where the district court strayed beyond its initial conclusion that "the ordinary and customary meaning of 'operatively connected' requires the . . . linking together of [two physical components] to produce the intended or proper effect"). Thus, the Court declines to construe this term beyond its rejection of the parties' respective proposals.

IV. At Least one of . . . and

Claim 1 of the '976 Patent contains the phrase "at least one of . . . and" in several locations, including for example:

> the countermeasure operatively coupled to the location processor and comprising at least one of a radio frequency transmitter and a kinetic effect, the location processor being further structured to selectively at least one of (a) control interdiction of the unmanned aerial vehicle in flight using a specific RF jamming

[39] JA at 11.

> frequency transmitted by the radio frequency transmitter, and (b) control deployment of the kinetic effect.[40]

The parties propose the following competing constructions of the phrase "at least one of . . . and":

XiDrone's Proposed Construction	Fortem's Proposed Construction
One or the other, or both, but both are not required.	The term requires at least one of the first category and at least one of the second category.

The cases cited by the parties show that the meaning of this phrase can change depending on context. Fortem cites primarily to *Superguide*, which noted: "The phrase 'at least one of' precedes a series of categories of criteria, and the patentee used the term 'and' to separate the categories of criteria, which connotes a conjunctive list." *SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 886 (Fed. Cir. 2004). The *Superguide* court found claim language that stated a "system comprising . . . *at least one of* a desired program start time, a desired program end time, a desired program service, *and* a desired program type" described a conjunctive list requiring one or more of each item in the list. *Id.* at 884 (emphasis original). On the other hand, XiDrone points out that in the specialized context of so-called *Markush* groups,[41] this language has a specialized meaning:

> A Markush group is a listing of specified alternatives of a group in a patent claim, typically expressed in the form: a member selected from the group consisting of A, B, and C. Therefore, "if 'wherein R is a material selected from the group consisting of A, B, C and D' is a proper limitation then 'wherein R is A, B, C or

[40] JA at 11.

[41] The genesis of the *Markush* moniker appears to be: *Ex parte Markush*, 1925 Dec. Comm'r Pat. 126, 127 (1924).

D' shall also be considered proper."

Abbott Lab'ys v. Baxter Pharm. Prod., Inc., 334 F.3d 1274, 1280 (Fed. Cir. 2003).

The Court finds the phrase "at least one of . . . and" as used in the '976 Patent provides a conjunctive list of criteria. First, even the authority on which XiDrone relies indicates, "[a] Markush group, incorporated in a claim, should be 'closed,' i.e., it must be characterized with the transition phrase 'consisting of,' rather than 'comprising' or 'including.'" *Id.* Claim 1 of the '976 Patent does not fit this mold because it uses the word "comprising" to transition, rather than "consisting of." Accordingly, this language does not constitute a *Markush* group even according to the authorities XiDrone cites.

Additionally, XiDrone's reference to the Abstract of the '976 Patent likewise does not demonstrate the language here is disjunctive. XiDrone points to the following language: "The interdiction element can either direct the unmanned aerial vehicle away from the property, place, event or very important person in a non-destructive manner, or can cause [sic] disable the unmanned aerial vehicle in a destructive manner."[42] The abstract no doubt suggests the interdiction element can either direct the unmanned aerial vehicle away or "cause disable" the unmanned aerial vehicle. Yet this language in the abstract does not require a disjunctive construction of "at least one . . . and." Rather, the language in the abstract more naturally refers to the portion of Claim 1 of the '976 Patent stating the system is "further structured to selectively"[43] employ RF jamming and kinetic effects. Put otherwise, Claim 1 of the '976 Patent discloses a system that must be capable of both RF jamming and using kinetic effects to deter

[42] JA at 1.
[43] *Id.* at 11 (emphasis added).

drones. That system is "further structured to selectively" employ both techniques. Thus, while both RF jamming and kinetic effects must be available in the system, they can be deployed "selectively." Based on the foregoing, the phrase "at least one of . . . and" provides a conjunctive list. The parties indicated during the hearing that no further construction beyond conjunctive or disjunctive is necessary.[44]

V. Determining the Location . . . Based on the Radar Position Detection and the RF Receiver Identification

Claim 1 of the '976 Patent discloses:

> the location processor determining the location of the unmanned aerial vehicle in flight based on the radar position detection and the RF receiver identification[45]

While the parties proposed competing constructions of this phrase, they clarified during the claim-construction hearing that their primary dispute concerns whether the claim is indefinite and therefore invalid, though Fortem also wants a construction that requires location to be determined based on RF receiver identification.[46]

The Court does not find the claim indefinite based on the language at issue, nor will it adopt Fortem's proposed construction. As a beginning point: "A patent shall be presumed valid . . . [and t]he burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity." 35 U.S.C. § 282(a). An invalidity defense must "be proved by clear and convincing evidence." *Microsoft Corp. v. I4I Ltd. P'ship*, 564 U.S. 91, 95 (2011). "[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution

[44] Claim Const. Hr'g Tr. 70:4–5, 73:7–15.
[45] JA at 11.
[46] Claim Const. Hr'g Tr. 76:13–77:21.

history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014).

On the one hand, Fortem is no doubt correct that identifying an RF receiver does nothing to determine location. Many of XiDrone's contrary arguments appear to conflate issues (such as substituting RF signal strength for RF identification). None of XiDrone's arguments explain how identification can determine location. Indeed, such a feat appears impossible.

On the other hand, the claim indicates the location processor "determine[es] the location of the unmanned aerial vehicle in flight."[47] XiDrone persuasively contends that utilizing the RF receiver identification along with radar position detection ensures the system is determining the position of the unmanned aerial vehicle rather than a bird or some other flying object.[48] This understanding easily salvages this portion of the claim from a finding of indefiniteness. Accordingly, the Court finds the claim language at issue is not indefinite.

For the same reason, the Court declines to construe this term in a manner that requires location to be determined from RF receiver identification. Fortem's argument implicitly asks the Court to overlook language in the claim and specifications, namely that the patented system is "determining the location of the unmanned aerial vehicle." This language in Claim 1 suggests RF receiver identification is used to differentiate unmanned aerial vehicles from birds or other moving objects the radar might otherwise

[47] JA at 11 (emphasis added).
[48] *See, e.g.*, Claim Const. Hr'g Tr. 81:5–9.

detect. Contrary to Fortem's argument, Claim 1 does not merely state the patented system determines location from RF receiver identification. Rather, the language states the system determines the location of the unmanned aerial vehicle. It uses both radar and RF receiver identification to determine location and to ensure the location is that of an unmanned aerial vehicle, rather than some other object detected by the radar. The Court declines Fortem's invitation to construe this language in a manner that omits language from Claim 1 of the '976 Patent. Thus, no construction is necessary

VI. Detect . . . in response to the at least one range sensor and the at least one directional or omnidirectional sensor.

The parties' Joint Claim Construction Chart included the phrase "detect . . . in response to the at least one range sensor and the at least one directional or omnidirectional sensor" as a disputed phrase in need of construction.[49] Yet the parties' briefing did not meaningfully address this phrase. Additionally, based on XiDrone's admission during the claim construction hearing, that this phrase is conjunctive, the parties agreed no construction is necessary.[50]

[49] ECF No. 50, Ex. 1 at 5.
[50] Claim Const. Hr'g Tr. 84:21–86:5

ORDER

Based on the foregoing, IT IS ORDERED the disputed terms of the patents are construed in the manner set forth above.

DATED this 4th day of February 2025.

BY THE COURT:

Ann Marie McIff Allen
United States District Judge